Frankly Speaking

"Think It Over"

WE have all read of the hindrances to troop movements by the chaotic clogging of the narrow roads of Flanders by fleeing pedestrians. True enough, these people had a right to the use of the highway; but, in exercising their rights, they aided in sacrificing their freedom and in some cases their lives and the lives of others.

Here in America, if our cities be bombed as the stone, brick and masonry English and European cities have been, evacuation from our wooden structures would have to be made in a hurry.

It is simple for those uninitiated and uninformed in traffic control principles to state that we of City X have such a large number of registered motor vehicles that the whole city population could be evacuated at one time.

In the first instance, such a ratio of motor vehicle registration to population is rare among the cities of the densely populated eastern coast.

Furthermore, should it be possible to put the whole city in cars at one time, it would be almost impossible under present traffic conditions to move them out *in time*. The choice would be between being charred in a wood fire or roasted in a tin oven.

The American version of Flanders' roads would be enacted on our own east coast. The people would take to "shank's mare" even though they started in an automobile, and one can readily picture the results.

Therefore the editors of this magazine urge all traffic engineers to work closely with the Office of Civilian Defense. As a suggestion, work out Pedestrian Defense Protection Campaigns. In this way, you can educate pedestrians and motorists to the equitable and orderly use of the streets, not only during blackouts or during evacuations from burning neighborhoods but also now before the impasse and later in the period of rehabilitation, when gasoline rationing and curtailments of car manufacturing will be experiences of the past.

In the era after defense, huge Public Works projects are prophesied by leaders in business and public life. Highways and freewheel transportation agencies will receive large sums for rebuilding and reconstruction.

Be prepared! Conduct traffic educational campaigns along sound engineering principles and reap a two-fold harvest in lives saved and traffic facilitated during this emergency and in the years A.D.—After Defense.

Leslie Williams

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APPLICATION OF TRAFFIC DATA TO STUDIES IN HIGHWAY ECONOMICS

By A. J. BONE

THE mass of traffic information being assembled by the traffic engineering profession and by the statewide highway planning surveys furnishes the factual background for the solution of some of the most complex problems in highway administration and finance. The full value of this information will not be realized unless it is applied intelligently to such problems. Charts and tables of the data are too often viewed as the end of the work rather than stepping stones to the solution of problems of broader scope. Several pertinent applications are outlined below.

When a major highway improvement is contemplated there is often a choice of routes. A common case involves the decision as to whether to improve an existing road or adopt a new location. Many factors must be considered, some tangible and some intangible. The former may be expressed in terms of money or some type of comparable units; the latter require judgment.

The logical approach is to set up a comparison or balance sheet for each of the alternate routes, including such items as the following:

Length, curvature, and grade

Traffic volume, classified by types of vehicle

Annual cost including amortization of investment and maintenance of all kinds

Vehicle operating cost

Accident loss

Travel time.

The problem is fundamentally one of traffic analysis and estimation. We can measure the traffic flow on the old route, but how much will be diverted to new route? Origin and destination data are needed. How much new traffic will be attracted to the new route by virtue of the improvement? A study of the region is necessary and experience before and after at similar existing improvements should be studied. Accident analysis and time studies fall within the scope of the traffic engineer. The cost items will be drawn from other sources but are of little significance unless related to traffic volumes.

Another problem requiring careful traffic analysis, is that of estimating the probable revenue from toll roads or bridges. Comprehensive traffic data for a wide area are necessary for this purpose. Before the Pennsylvania Turnpike was constructed such an estimate was prepared. As time goes on it will be interesting to observe how closely this estimate is borne out by actual toll receipts.

Most of our acute traffic problems today exist within cities. Their solution is most difficult because of the high cost of making improvements and the difficulty in raising the necessary funds. The presence of long lines of waiting cars is visual justification of needed improvements but how can such justification be evaluated? How can we choose between several worthy improvements when funds are insufficient to meet the cost of all? Delay studies together with traffic studies will make possible an evaluation of the aggregate cost to motorists of these delays, and the benefits derived from improvements. We must know the amount of delay throughout the day, month and year, and the numbers of each type of vehicle delayed.

The extra cost of motor vehicle operation in traffic becomes significant only when the numbers of such vehicles so affected are taken into consideration.

Few would claim that the present method of distributing highway funds in many states is satisfactory or equitable. The system, if it may be called such, has evolved through political expediency rather than through any scientific or rational approach. There has been little evidence with which to question political expediency in the past, because little was known about the distribution of traffic or of the incidence of highway funds. The traffic surveys, road use surveys and financial surveys of the state-wide planning surveys now place at the disposal of the public factual data upon which a rational highway plan can be developed and an equitable system of financing worked out.

One essential approach to such a problem is to recognize the unity of the highway network in providing highway transportation. Although the highways and streets are provided by the numerous political subdivisions of the states, they are all essential in varying degree to highway transportation. The motorist recognizes no political boundaries in traveling from one place to the other. Correspondingly any state-wide plan for highway development likewise, in its broad scope, must not be confined by political boundaries.

Traffic facts will tell us where the gasoline tax is earned. Registration statistics will tell us where registrations originate. The financial survey will show the sources of the funds used for highway purposes by the several governmental subdivisions of the state. When these are compared a better correlation of expenditures and income will be possible. With facts rather than arguments to present, more favorable legislative action should be obtained than has been the case in recent years.

It would seem self-evident that some relationship should exist between the amount raised from motor vehicle taxation and the cost of providing and maintaining highways. The general policy has been to adjust the highway program to available funds rather than to determine the need and levy taxes accordingly. Difficulty arises in determining what the cost of the highways really is. We have an historical record of expenditures but these are not necessarily representative of the average annual cost of the highway system, present and future. Expenditures vary; there have been periods of expansion followed by periods of retraction.

The elements of cost which should be adequately provided for in any highway budget are:

Administration
Maintenance and Operation
Retirement of bond issues
Replacements of worn and obsolete roads
Expansion of facilities as traffic demands.

The planning surveys and traffic surveys furnish the basic data for estimating the last two items which all too often are overlooked.

A number of hypotheses have been proposed for allocating costs among motor vehicle funds and other sources. One approach is to allocate funds in the proportion in which the several classes of highways and streets are in "general" vs. "local" use. These terms are difficult to define precisely. Roughly, general use is through traffic of considerable range having no interest in abutting property along the route, whereas local traffic is of smaller range, originating or destined for points within a community. Before road use surveys were made, the above separation could be little more than speculation. Sufficient data have been accumulated now, however, so that a quantitative answer may be approximated.

The fact that motor vehicle tax rates vary widely from state to state is evidence that no rational basis exists

for many of the schedules now in force. In order to develop a highway cost basis for motor vehicle taxation, it is necessary to know the following facts:

Number of vehicles in each weight classification

Average annual mileages for each class

Average miles per gallon of fuel consumption

Average and maximum wheel load for each class

Average gross weight for each class.

This information is being gathered by the state-wide highway planning surveys; previously much of it was non-existent.

Many methods have been proposed for allocating costs among different vehicle types, some quite complicated. One simple and reasonable method for distributing cost responsibility is in proportion to ton miles. This factor recognizes the two pertinent vehicle characteristics entering into highway use: mileage traveled and weight. Road use surveys will produce the necessary facts to apply this method. Maryland has done so in a recent report on its state-wide highway planning survey.

Much has been said and written about competition between railroad and highway transportation and its effect on railroad traffic. Little factual data are available, however, regarding the amount (in tons and dollars) of truck competition. The railroad business has long been a matter of record, but the highway business was unknown until appraised through traffic surveys. It is now possible to draw a "'tons-carried" flow sheet as well as a vehicle flow sheet. Connecticut has published such a flow sheet in the latest Biennial Report of the State Highway Commission.

An inspection of the ton-mile flow sheets shows strikingly the concentration of tonnage on through routes and the concentration of tonnage in a relatively few heavy vehicles.

Truck traffic on the Boston Post Road near the N. Y. line in Connecticut is of particular interest. The flow sheet shows 11,000 tons per day passing Greenwich, or 4,000,000 tons per year. More than half of this tonnage is carried in tractor-semi-trailer combinations. In spite of the fact that the Boston Post Road was relieved of a large volume of passenger car traffic when the Merritt Parkway was opened, the former road is still congested. The concentration of tonnage on this route suggests the necessity for studying the advisibility of constructing a truck route to relieve the Post Road of long-haul commercial traffic.

Condensed from an original paper by A. J. Bone, Asst. Prof. of Highway Engineering, Mass. Inst. of Tech., delivered before the First New England Traffic Engineering Conference, M.I.T., Cambridge, Mass., June 1941.

ONE-WAY STREETS AND THEIR VALUES

By DWIGHT MCCRACKEN

THE remarkable development of the motor car, coupled with a rapid extension and improvement of our highway systems has brought to modern cities a serious traffic problem. Cars are being brought into central business districts on super-highways and parkways in volumes that were not dreamed of at the time the city's streets were laid out. We now have a situation in most cities where modern improvements in rural and suburban traffic facilities have increased the downtown traffic load while at the same time accentuating, by comparison, the inadequacy of downtown facilities.

The increasing emphasis on better highways and faster cars has not been paralleled by corresponding ad-

justments in city streets largely because of space limitations and the prohibitive expense involved in overcoming those limitations. Street widening has proved very costly and frequently has failed to relieve congestion because of intersection difficulties, medial conflicts, and the attraction of additional volumes of traffic from neighboring streets in excess of the additional capacity provided. Meanwhile, the paralleling streets, through loss of traffic to the widened one, come to be regarded as secondary, and property values suffer while congestion and accidents go unrelieved.

Elevated or depressed roadways, vehicular tunnels and by-pass routes serve to relieve central business streets of a good part of the through traffic loads, but they, too, are costly and, although they help, they seldom solve completely the problem of congestion and accidents incident to *local* traffic circulation.

Intersection restrictions on roadway capacities can be relieved through grade separations or traffic circles, but in solidly built areas the cost is great, the facilities cramped, and traffic circles are usually too small for the loads involved.

In the face of these difficulties, cities are turning increasing attention to another method of eliminating or at least minimizing traffic conflicts, which though less complete in the solution afforded, does provide practical relief at comparatively little cost or physical alteration. The method is to restrict the flow of vehicles to one direction only on certain streets. There are several types of one-way streets, the most common one being where the flow is in the same direction at all times. Because of limited time, this paper will be confined to this particular type. There is also the type where the direction of one-way movement is reversed at periodic intervals based on the fluctuations in the direction of predominant flow. Third, there is the type that is one-way during peak loads and two-way the rest of the time.

General Values of One-Way Streets

Fundamentally, the *number* of foot and wheel units is not alone the determining factor as to the amount of congestion and number of accidents. Conflicting directions and speeds at which they move in the same direction are equally important. We have all seen large volumes of traffic move with comparative freedom and safety where physical design has eliminated all or most of these conflicts. The general values of one-way streets are apparent when we consider how far they can go as a substitute for design changes where the latter are impossible for financial or other reasons. The conflicts to be relieved are cross flows and turning movements at intersections, opposing flows along the center line and crossing or entering movements from pedestrians and vehicles along the edge between intersections, and speed differential between vehicles moving in the same direction.

At Intersections—The possible points of vehicular collision are reduced from 16 at the intersection of 2 two-way streets to 5 at the intersection of a two-way and a one-way street, and only 1 at the intersection of 2 one-way streets. Although the merging of turning movements with straight-through movements and with each other quite possibly represents additional points of possible conflict, the more serious are the "crossing" conflicts. Merging conflicts are, of course, correspondingly reduced with the reduction in turning movements. The reduction in possible conflict points between foot and wheel movements is also noteworthy, from 16 to 10 to 6.

Between Intersections — The most serious types of collision—head-on or side-swipe between vehicles traveling in opposite directions or pedestrians

trapped between opposing flows—are completely eliminated. Other forms of medial conflict, such as side-swipes between vehicles traveling in the same direction are minimized because vehicles are not forced to cut in on each other by oncoming cars. Even though parking manoeuvers may occasionally force weaving, contact is less severe because movements are merging.

Marginal conflicts are also reduced between intersections for several reasons. At night the absence of headlight glare makes it easier for drivers to see pedestrians and parked cars along the curb. Drivers are not forced into the curb or parked cars by oncoming cars. Most important of all, pedestrians crossing between intersections (and they *will* do it) can concentrate their attention entirely in one direction with the result that they are less apt to step out at the wrong time. The temptation to do so is also less since a "break" occurs in a single line of traffic much more frequently than it does simultaneously in two opposite flows.

The type of conflict existing between fast and slow vehicles moving in the same direction is also reduced by one-way operation.

The reduction of head-on, marginal and intersectional friction causes traffic to flow more smoothly in the favored direction with less need for sudden differentials in speed between leading and following vehicles. Also, such lane stoppages as do occur from double parking or stopping in double line to take on or discharge passengers, can often be by-passed without serious deceleration because of the complete absence of oncoming vehicles.

Resulting Advantages

The ability of one-way streets to eliminate or reduce the severity of these various conflicts results in the following advantages:

Reduction in Accidents — For example, in Erie, Pa., a city of 116,000 population, the one-way system involving 3 parallel streets totaling 5 miles in length brought an overall reduction in accidents of 16%. Accidents were reduced on the major street 75% while volume increased 8%, but accidents increased on the minor parallels each side of the major from 107% and 58% increases in flow respectively.

In Malden, Mass., population 58,000, a system involving 2 parallel streets totaling 64 miles brought a reduction of 43%. In Gloucester, Mass., population 24,000, a system covering 2 parallel streets totaling 75 miles brought a reduction of 45%. In both cases the biggest reduction was in pedestrian accidents. Larger cities such as New York, Chicago, Philadelphia and Boston show reductions on one-way systems ranging from 30% to 60%. In the 1938 Report of the Highway Research Board, Mr. Canning, Chairman of the Committee on Municipal Regulation, stated that accident reductions of more than 50% were realized on one-way street systems in six cities studied (1,767 per year before, 878 per year after).

Increased Traffic Capacity — The same Report indicates that the traffic volumes of eight streets studied increased an average of 93% after becoming one-way thoroughfares while citywide volumes increased an average of only 16%. Drivers are attracted to one-way streets because it is easier to drive on them. Although the same number of lanes may still be available for one-way movement as existed for two-way, the capacity of these lanes is increased because they may be used continuously without interruption from oncoming turns or passing movements. This is particularly true where there is an odd number of lanes.

Increase in Average "Overall" Speeds—The greater ease of passing that comes with one-way operation

makes it unnecessary for all traffic to move at the speed of its slowest component such as a bus, a truck or a "cruiser" in search of a parking place. This segregation of fast and slow moving traffic shortens the running time to and from downtown by making possible *sustained* reasonable speeds without need for wasteful, hazardous "bursts" of excessive speed. Detroit's Traffic Engineer, Mr. Mickle, reports an increase in average speed of 30% on 4 one-way streets totaling 16.8 miles. Mr. Canning's report, already mentioned, shows average running speeds from 9 to 18 m.p.h. before one-way and 21 to 35 m.p.h. after the change. Average speeds exactly doubled (from 14 to 28 m.p.h.) on two boulevards converted to one-way operation in Chicago's Park District.

Curb Parking Capacity Aided—To retain two-way movement and at the same time relieve congestion it is often necessary to prohibit parking on one or both sides of a busy street. Where off-street space is inadequate, poorly located or priced too high, this may be undesirable. With one-way movement, curb parking can often be retained on at least one side of the congested street and sometimes both. From a practical standpoint, one-way movement is more easly enforced than "No Parking." It is almost impossible to prevent vehicles from stopping at the curb at least momentarily and, when it happens frequently, efficient use of the supposed additional lane for moving traffic is destroyed.

Traffic Control Signal Operation Simplified—The accelerated discharge capacity of one-way streets at intersections permits shorter cycles. Timing problems at complex intersections are simplified with respect to turning conflicts, extra phases for 5 or more entering ways, etc. Progressive timing at successive intersections on a one-way street is greatly simplified, and the speed for which the signals are set can be more easily maintained by traffic.

Simplified Enforcement — "One-way" regulations are easily enforced, almost self-enforcing once they have been well established.

Relative Cost Small—One-way installations cost but little, compared to alternate remedies. In Boston, a one-way system involving two streets less than ½ mile in length worked so well in relieving a complex intersection (City Square) that the Traffic Commission by adding channelizing islands was able to abandon a very expensive plan for a traffic circle.

Popular with Public — Public approval is usually enthusiastic where the one-way rule has been intelligently applied. This is highly important to any attempted traffic improvement. In Erie and in Boston one-way systems were overwhelmingly approved after 90-day trial periods, in spite of earlier skepticism and opposition from business abutters.

Business is benefited in two ways. Mass transportation schedules are improved. (In Erie running times were shortened 6 minutes on a 3-mile run where buses followed parallel one-way streets in opposite directions instead of two-way on the old single-street route.) Economic savings in time, gasoline and accident repairs help also taxicab and truck companies. Merchants benefit through greater accessibility (increased safety and fewer delays for patrons). Often curb parking is retained that would have to be sacrificed under two-way operation.

Unfavorable Factors in One-Way Operation

There are some disadvantages in one-way street systems which should not be overlooked, but which, as a general rule, are outweighed by the advantages mentioned.

Perhaps the most obvious unfavorable factor is that motorists must travel farther to reach destinations.

However, it is generally found that the steadier flow provided on one-way streets more than compensates in time saved for the slight increase in distance which seldom amounts to more than one and a half to two blocks. An example of this principle is found in rotary traffic circles and grade separations which require motorists to travel 5 or 10 times the normal distance in order to make a left turn, yet drivers are glad to do it because they can "keep going" and save time in the long run.

Other factors which can become unfavorable if not properly controlled are:

The tendency of some motorists to drive *too* fast when all traffic is moving in the same direction. Speed signs and police supervision can correct this, but it is nevertheless a common difficulty.

Weaving is encouraged on wide streets cutting down potential capacity.

The confusion experienced by some out-of-town motorists in trying to reach destinations on or in the vicinity of one-way streets. Careful signing at each entrance to a one-way street will keep them from going the wrong way on it. A street map will keep them from getting too far off and may in fact route them so as to take advantage of the one-way system.

Possible unfavorable influence to some business establishment abutting on the one-way street through loss of traffic in one direction. This is probably one of the greatest obstacles to the adoption of one-way plans because business men so often oppose one-way proposals on the grounds of an anticipated loss of business. However, it is seldom in reality a disadvantage, as evidenced by the fact that volume usually increases and accessibility is improved through faster overall speeds and retention of curb parking.

Factors Essential to Successful Operation of One-Way Streets

Before discussing specific conditions warranting one-way street installations, it is well to have in mind certain fundamental prerequisites to the successful operation of the one-way rule under any type of situation.

The presence of an adjacent parallel street or streets upon which flow can be accommodated in the opposite direction without congestion. These alternate parallels are usually made one-way also, for the best results, but they need not be if they possess a potential two-way capacity sufficient for the augmented traffic. This involves considerations of signal control, street design, and various types of traffic as well as the mere matter of width. Where alternate parallels are not available, it is sometimes desirable to reverse the one-way direction on the single street to accommodate fluctuations in the predominant flow between morning and afternoon or whatever the periods may be.

These alternate parallels must be conveniently near the proposed one-way street so that motorists and bus passengers will not have too far to go to travel in the desired direction.

Entrance and exit points *along* the one-way street should also occur at frequent intervals so that traffic can get on or off it with a minimum of diversion.

The one-way rule should be applied in the direction of predominant flow (determined by traffic counts) so as to conform as nearly as possible to the normal traffic habits of the community.

As a general rule the one-way direction should "drain" traffic *away from* congested areas or intersections.

Curb parking should not be permitted to interfere and offset the advantages of one-way movement. The

demands of moving traffic should be met first and after sufficient lanes have been reserved to provide the needed increase in traffic capacity, the residual space may be devoted to curb parking.

Mass transportation routes should be fully considered in any one-way plan and the direction of flow should conform to route limitations if at all possible. Ordinarily streets with one-way bus or street car operations should be made one-way for all traffic in the direction of transit travel. Where two-way bus operation exists on a street needing one-way treatment, an adjacent parallel street acceptable to transit operators and patrons should be available for the opposing flow before the one-way rule is installed.

Standard signs should be erected at the entrance of every public way to the one-way street.

An intensive program of educational enforcement should accompany the inauguration of the one-way plan to get the public started right and in a cooperative mood. It should be continued until the traveling public is thoroughly accustomed to the change.

Strict supervision should be maintained over the speed on one-way streets, particularly approaching and entering intersections.

Conclusion

Although one-way streets are one of our oldest forms of traffic control measures and although there are a substantial number of cities with one or more installations, I do not believe that American cities as a whole have yet realized the possibilities for moving traffic more freely with less hazard through the judicious application of this control measure. We are spending millions of dollars each year to build steady flow into our new highways and parkways. Physical design and redesign are admittedly the most satisfactory method of achieving safe, expeditious movement and can be applied at comparatively reasonable unit costs where sufficient space is available.

However, in solidly-built areas we should do more to approach the ideal of steady flow through one-way street systems which can be quickly and inexpensively installed pending the day when we will be able to redesign urban as we have our rural and suburban traffic facilities.

An original article by Dwight M. McCracken, (Mem. I.T.E.), Director, Traffic and Safety Bureau, Liberty Mutual Insurance Co., Boston, Mass. Paper given before Greater New York Safety Council 12th Annual Safety Convention, April 1941.

SPEED REGULATION IN MINNESOTA

By W. F. ROSENWALD

EVER since the automobile has become a common vehicle on our streets and highways, the problem of regulating the speed of such vehicles has been a most controversial subject in connection with the growing highway transportation problems. It is actually one of the least understood but still has produced a tremendous number of self-opinionated experts, many of whom have but very little foundation for their theories and too often are actually a hindrance in the finding of a logical solution.

It is realized that a vehicle standing still is not apt to be involved in an accident, and it is, therefore, natural that in looking for a "cure all" for traffic accidents, attempts are made to slow down traffic sufficiently to satisfy opinion in this matter.

Speed is given as a factor in many accidents, not necessarily as the cause, but it must be admitted that speed does have a direct bearing on the

severity of the resulting injuries and damage.

Actually, in order to handle the ever increasing volume of traffic it is necessary to speed up traffic movement generally unless it is our desire to arrest the further development of transportation which has already made such tremendous advances and upon which so much of our economic and social life depends. But this speeding-up must only be done within the bounds of safety. The natural tendency to increase speeds is helpful when all vehicles move at nearly the same rate, but individual units traveling at speeds above or below that of the mass volume thereby set up needless hazards that must be curbed.

There are numerous instances where the normal speed of traffic has been increased with actual improvement in the accident rate. This is being accomplished in some instances thru improvements in design of the highway; such as, alignment, curves, intersections, road surfaces, divided traffic and other traffic control devices, and freedom from roadside interference.

Improvements in the automobile are constantly being made to make it possible to operate safely at higher speeds.

The greatest improvement, however, is necessary in the performance and skill of the drivers. A study of accident reports tell us that driver failure occurred in fully 90 per cent of the accidents, and until all roads are developed so as to make them nearly foolproof we must look to measures which will reduce the shortcomings of the driver. Fortunately much is being done to remedy this by regulation, by enforcement and by education. The participation of many adults in safe driving classes is an example of the desire which most drivers possess to remedy their own shortcomings.

If all drivers were sufficiently skilled so that we could rely on their judgment and ability to utilize the highway facilities safely, it would not be necessary to establish speed limits, but unfortunately this is not so. Ability to manipulate a vehicle, unless coupled with sound judgment, does not constitute skillful driving. Because this is so, it is necessary to establish speed limits in order to offset the faulty judgment displayed by some insufficiently skilled drivers, and also to guide the good drivers in situations where hazards exist that are not sufficiently conspicuous to serve as their own warning.

Obviously it has not been possible to improve all the streets and highways at the same time and to the same standard, with the result that their speed capacity varies widely. The nature of roadside establishments also is a constantly changing factor of so serious a nature as to oftentimes defeat the advantages of an otherwise excellently designed highway. Because of this it is necessary to vary the speed limits to fit the conditions that are encountered.

It is necessary, however, that speed limits be reasonable and logical. An obviously unreasonable restriction will only result in contempt and disregard of such restriction on the part of the traveling public, destroy the motorists confidence in the judgment of traffic authorities, and breed disrespect for traffic control devices. Unreasonably low speed limits are at the bottom of much of the speeding nuisance, and investigation has proved, paradoxically, that top speeds on major streets frequently go down when the speed limit goes up.

The method set up in the Minnesota Highway Traffic Regulation Act, of establishing speed limits to fit the conditions encountered on the various streets and highways, has been found the most satisfactory of any scheme heretofore worked out and has been

well received by the public.

The Minnesota method in brief is a basic requirement to drive in a reasonable manner according to highway, traffic and weather conditions, and not to exceed posted speed limits. Where there are no posted speed limits, the limits are 30 m.p.h. in cities and villages, 60 m.p.h. elsewhere in daytime and 50 m.p.h. elsewhere at night.

The commissioner of highways of the state alone has the authority to authorize the posting of speed limits other than those just mentioned, but he can do so only after an engineering and traffic investigation which will disclose that a specific rate of speed is greater or less than is reasonable or safe, under the conditions found to exist.

On state trunk highways the commissioner may make such an investigation and determination on his own initiative, but on roads or streets which are not a part of the state trunk highway system he does so only upon the request of the local authorities having charge of such roads or streets.

When determination to change a speed limit is made, the new limit becomes effective immediately after appropriate signs have been placed.

The signs used consist of black letters on a white background and are 18 inches wide by 24 inches vertically. They carry the necessary message in the fewest possible words so that it can be easily read, as for example "Speed 30 Limit," "Speed 40 Limit," "End Speed Zone," "Limit 60 Night 50," etc.

The department of highways has developed what we believe is a logical procedure in ascertaining the facts for making a determination for authorization of a change in speed.

We ascertain the speed of a sufficient number of cars to give us a comprehensive chart of the speeds prevailing at the location under consideration. This is done by means of an instrument which is commonly referred to as a "speedmeter" and which thru contact detectors on the roadway indicate the exact speed at which any and each car passes a given point. The speedmeter and the recorder are usually in a car placed in an inconspicuous position off the roadway, but from which point the traffic can be observed.

When the speeds of a sufficient number of cars, never less than 100 and usually many more, have been checked, the degree of observance of existing limits is evident.

If about 85 per cent of the cars are traveling within the speed limits, then there is no occasion for a change unless other factors such as accidents or behavior indicate need for further investigation. It is, of course, evident that with 85 per cent of the drivers naturally observing the speed limit the problem of enforcement is materially simplified.

Another important factor is the 10 m.p.h. range which contains the largest number of cars. This is referred to as the "pace of the traffic" and if the existing speed limit falls near the middle or in the upper half of this pace it is another indication that there probably is nothing wrong with the speed limit.

The accidents occurring on the road in question are studied, and the arrests and warnings which have been found necessary are considered. If up to this point the difficulty which occasioned the investigation has not been solved, the road itself is studied to see in what respect it may be inadequate.

It is not at all unusual to find that instead of a change in speed, some other engineering treatment will make a lower speed limit unnecessary and in some cases will make it possible to actually step up the limit. Such measures may include a rearrangement of

signs, signals, markings or other traffic control devices, a stepping up of enforcement of existing regulations, or a physical change in the road itself. Often roadside establishments or operations conducted in an attempt to exploit the possibilities of profit from those using the highways, actually become a serious problem by setting up conditions which induce interference with the traffic and create unnecessary hazards.

Many self-opinionated experts have been much concerned with securing extreme restriction in crowded, congested areas, such as a retail business district or other place where crowding is obvious. The problem in such cases is one of moving controlled traffic more freely so as to relieve the congestion and at the same time protect the rights of pedestrians. Parking practices and facilities are usually a more serious problem in these areas than is the question of speed.

Slow moving vehicles in a stream of more rapid flowing traffic are forbidden by law to impede or block the normal and reasonable movement except when reduced speed is necessary for safe operation or in compliance with law.

Suggestions are frequently made that we should have a minimum limit in addition to the rule just mentioned, but as yet no way has been devised which would be practical under the rapid changes which accompany sudden variations in weather, traffic congestions, etc.

A highly controversial subject in connection with speed regulation has been as to whether the speed limits should be "prima facie" or "absolute." "Prima facie" means that exceeding a definite arbitrary point is evidence of dangerous driving but not itself an offense. Under an "absolute" limit rule whenever a driver exceeds the arbitrary limit, he is thereby committing an offense regardless as to whether it was hazardous or not. In the latter case all that is necessary for a conviction is to prove that the speed traveled did exceed the limit, whereas under the "prima facie" rule the defendant may show as a defense that the speed traveled was not actually unsafe.

Under the Minnesota Highway Traffic Regulation Act all speed limits in any city or village or any posted speed limits are absolute, but the open country day 60 m.p.h. and the night 50 m.p.h. are "prima facie" limits as long as they are not posted by duly authorized standard signs.

Under the present day practice of determining speed zones or limits the merits as to the "prima facie" or "absolute" rule are not particularly important because even under the "prima facie" rule a defendant would have to upset the determination which was based on an engineering and traffic investigation, and prove that the speed limit which was posted was based on an erroneous determination.

Until a well founded determination has been made in any case as to the need of an "absolute" limit, the "prima facie" rule is undoubtedly the more in keeping with our form of government and the rights of an individual thereunder, and I believe is more conducive to the intelligent use of judgment in our enforcement practices.

In brief our whole plan of speed regulation is based on the basic principle of driving reasonably according to highway, traffic and weather conditions and all other provisions are incidental to the accomplishment of that and to the final objective that we may enjoy the advantages, opportunities and privileges of the open highway with the highest degree of safety.

An original article by W. F. Rosenwald, (Mem. I.T.E.), Traffic Engineer, Traffic and Safety Division, Department of Highways, Minnesota.

HIGHWAY SAFETY ADMINISTRATION OF TRAFFIC ACTIVITIES

By FRED W. JUERGENS

DETROIT is confronted this year with an increase of skilled workmen being transported to the city from other states. These workmen are on defense projects. Trailer camps are springing up in surrounding counties. These people will have to adjust themselves to the traffic conditions of Detroit. Our highways which have been carrying capacity loads during the rush hour periods will be forced to bulge a little more. Accidents will increase with the resultant need for additional enforcement and traffic control engineering.

The police and the courts are the agencies necessary to carry out the principles of traffic law and enforcement. Enforcement can only be effective and thorough when there is cooperation between these two agencies. This implies complete understanding of each others' functions as related to safety on the highway. For instance, the Police Department and Traffic Court must be thoroughly agreed on what constitutes adequate evidence for convictions. Last year over 200,000 people were sent to court by our police on violations which contributed to accidents.

Enforcement is for the purpose of safeguarding both motorists and pedestrians. It is most effective when it is strict, certain and quick. With industry expanding and a large increase of motor vehicles on the highways, every police department needs *more* enforcement to protect the interests of the careful, courteous and law-abiding driver against that of the discourteous, selfish and non-cooperative driver.

In Detroit, the Traffic Division is is composed of a number of sub-divisions, each charged with its own specialized function. The Traffic Stationary Squad is charged with directional control of traffic in the downtown sector. Officers are stationed at the busiest intersections to expedite traffic flow and to maintain observance of regulations in their immediate vicinity. They are augmented by a squad of officers whose duty it is to check parking limitations and assist in enforcement of all safety regulations. A special means of effective enforcement of all safety regulations on parking is brought about through the use of five towing vehicles, which remove cars parked in prohibited zones. This close supervision results in a low accident rate in the area of their activities. These stationery traffic officers are also the ambassadors of good will for the city.

The next sub-division, the Public Vehicle Squad, is charged with the supervision of all public vehicle operations: taxicabs, inter- and intra-state buses, For Hire vehicles, together with the supervision of parking lot activities. Taxicab operations demand most of their time since a complete check of all taxicab drivers and their activities must be kept. A higher standard of driver is now possible with a careful check of their records and qualifications when making application for operating permits.

Buses are checked to see that they are equipped with proper licenses, bond and insurance requirements, and also to see that all inter- and intra-state buses operate over specified routes when entering and leaving the city. Our (Detroit) Bus Ordinance has a provision requiring all bus operating concerns to provide offstreet or private property terminals. Consequently, there is no congestion caused by load-

ing and unloading vehicles of this type on our streets as was our experience before this ordinance requirement became effective.

The third sub-division, the Public Safety Bureau, promotes safety through every available channel. The personnel of the Safety Bureau consists of eleven specially trained safety promoters. All have matriculated in public speaking and were chosen for their duties by qualifying as especially fitted to contact the general public.

Each of these safety officers is assigned to supervise a district in the city and must contact all schools in his district with a follow-up of safety instructions for school children, as well as organize school-boy patrols and supervise their activities.

Adult safety education is handled by these officers through every possible medium. Talks are given before public gatherings, at theatres, clubs, fraternal meetings and over the radio.

The Drivers License Bureau is the fourth sub-division. It examines all operators of motor vehicles that reside within our city, and it is here that we have the opportunity of eliminating a large number of applicants unfit to operate motor vehicles. All applicants are closely observed for physical defects which may hinder operation of a motor vehicle. Their previous traffic records are also checked and, if too many violations have occurred, the applicant is then cited to appear for a hearing before the State Examining Board to determine his future driving status. The Examining Board is one of the most important safety-valves in our accident prevention scheme.

The Accident Prevention Bureau, which investigates all accidents involving criminal liability of drivers, has five platoons of ten men each, assigned to radio equipped scout cars which are distributed so that twenty cars are on the streets at all times. These radio crews respond to all accidents in their district, and the officers make a thorough investigation at the scene and follow the case through to its conclusion.

The sixth sub-division, the Traffic Court Detail, is a branch of the Recorder's Court. Forty-four officers constitute this detail and act as Court and Warrant officers. Plans are being formulated to replace the Court officers with Bailiffs who will be civilians deputized by the Courts.

Seventh and last is the Motorcycle Squad, which is the main traffic enforcement detail as it is their duty to patrol the streets and control traffic. Their presence brings almost complete adherence to all traffic regulations, and motorcycle squads in all cities should be kept at full strength at all times. They concentrate on a selective type of enforcement and are stationed on "high accident" streets.

In May, 1938, a Traffic Engineering Bureau and a Traffic Committee were established by ordinance in Detroit.

This ordinance, establishing the Traffic Engineering Bureau, specifies that, "The powers and duties of the Traffic Engineer shall be as follows:

"No signs, signals, markings, or other devices guiding, warning, directing, or controlling traffic shall be installed or removed except on the basis of a traffic engineering analysis conducted by the Traffic Engineering Bureau and with the approval of the Traffic Committee hereinafter created.

"Have general supervision and control over the selection, design, fabrication, purchase, erection, maintenance, and operation of all signs, signals, markings, and devices guiding, warning, directing, and controlling traffic.

"Conduct such engineering investigations of traffic conditions as may be required or permitted by any ordinance of this city, or as may be requested by the Mayor or the Common Council or either of them.

"Conduct engineering analyses of accidents and devise methods for preventing accidents.

"Have the power to call on other Departments of the City for assistance in performance of its duties hereinunder, and it shall be the duty of such other departments to render assistance as required. All questions as to what shall constitute a reasonable requirement to be determined by the Common Council."

It is through this latter provision that the Traffic Engineering Bureau calls on the Police Department to manufacture, install and maintain signs and markings and the Public Lighting Commission to install and maintain traffic signals under the direction of the Traffic Engineering Bureau.

The Traffic Committee, as established by the May, 1938, ordinance, states that, "There shall be a Traffic Committee composed of the persons holding the offices of Deputy Commissioner of Police in charge of Public Safety who shall act as Chairman of the Committee, Superintendent of Public Lighting, General Manager of Department of Street Railways, Secretary of City Plan Commission, Corporation Counsel, Commissioner of Public Works, Traffic Engineer, two Judges of the Traffic Court.

If we were to compare the operation of the street system with that of a railroad system, we would see that the Traffic Committee may be compared to the board of direction of the railroad and that the Traffic Engineering Bureau may be compared to the operating division.

In conclusion, it appears that the greatest economic value of traffic administration can be realized only through a balanced traffic improvement program of Engineering, Education and Enforcement.

Condensed from a paper presented by F. W. Juergens, Director of Traffic, Detroit Police Dept., at the 27th Annual Highway Conference held at the University of Michigan, February 1941.

GADGETS

By D. M. BALDWIN

GADGETS guaranteed by their sponsors to prevent all traffic accidents, or at least 50% of the total, are the bane of existence of most state safety men. In a state motor vehicle department these gadgets flow in an endless stream across someone's desk. Undoubtedly motor car manufacturers see a large number of these trick devices, few of which are practical for use.

The field includes all the safety features of a motor vehicle, but there has been a concentration on headlamps, probably because headlamps seem to be an unsolved problem. Directional signal devices, moving stop lights, recording speedometers, identifying parts that fall off at the scene of an accident to convict a hit and run driver, whistles that blow at speeds over the legal limit, reenforced front axles, automatically defrosting windshields—the list could go on nearly indefinitely.

Sealed Beam lighting has eliminated many of the headlamp gadgets, but they are still coming in. Anti-glare devices have been predominant for some time. Ranging from a green glass shield to be supported in front of one headlamp bulb and a red glass shield

in front of the other to elaborate systems of vanes guaranteed to cut off all stray upward light—and incidentally cutting off most of the light. A few have been manufactured commercially, and some have been foisted on a gullible public.

Not long ago the market was flooded with yellow or amber covers for headlamps. Some were of a plastic film, and some consisted of a coating of yellow paint for the regular headlamp lenses. All were advertised as making fog lamps out of the regular headlamps. The only practical effect was to reduce the light output of the headlamps and make vision more difficult under normal conditions. No advantage was secured for driving in a fog—unless the reduced light output was helpful through a lessened reflection into the driver's eyes.

Non-glare devices in the form of tinted plastic films to be pasted on the windshield have been sold. One inventor has produced a gadget consisting of an odd-shapped piece of tin supported by a long arm attached to the left front corner post. The tin shield is supposedly adjusted so that it comes between the driver's eyes and the approaching headlights. Needless to say neither the film nor the shield do the trick.

The directional signal field has had its share of trick devices, too. Some of these have proven valuable and have been adopted, but many are worthless. A short time ago there appeared a device to be attached to the inside of the rear glass of passenger cars, controlled by the driver, and intended to provide a signal to following drivers that a turn was to be made. The device consisted of a 3cp bulb in a tin box. An arrow was cut out of the top of the box and a red film was pasted over the cut-out. It was visible for a few feet under good lighting conditions, but was of practically no value as a signal device.

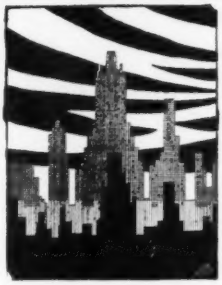
It is interesting to note how well the public has accepted some of the gadgets and how they resent being told that their pets are really nothing but sales tricks. To go back to lighting, the familiar yellow or amber fog lamp with its "'fog-penetrating" yellow light is a prime example. The U. S. Bureau of Standards says that yellow light does not penetrate fog. The advantage of the fog lamp lies in its beam pattern and position on the vehicle. The public has been completely taken in, however, and few crystal lenses are sold for fog lamp use although the latter are more efficient.

While on the subject, some mention should be made of fake replacement parts for lamps. The biggest field here is in that of lenses, for both headlamps and rear lamps. Although Sealed Beam headlamps will help the situation, there are still many headlamp lenses sold which are nothing but frauds, and which in some cases cost more than a real lens.

A device will shortly be on the market which automatically dims your headlamps on the approach of another car, or on a lighted highway. It is a gadget but surely a desirable one. There are others which serve as useful a purpose and yet which some people will not use because they think of them merely as gadgets.

Meanwhile they continue to appear —some good and some bad. America is truly a gadget country!

An original article by D. M. Baldwin, Safety Engineer, State Police and Safety, Richmond, Virginia.



Stop, Look and Listen

Congratulations!

Virden A. Rittgers (Assoc. I.T.E.) recently resigned his position with the San Antonio, Texas, City Department to become the City Traffic Engineer for Richmond, Virginia. In Richmond Mr. Rittgers heads a key department directly under the supervision of Captain W. C. Herbert, Director of Public Safety.

Mr. Rittgers was City Traffic Engineer of Oklahoma City and Street Traffic Engineer in Oklahoma. In September, 1939, he went to San Antonio, Texas, to become City Traffic Engineer.

Ilgner with Milwaukee 25 Years

Howard F. Ilgner, Member and former Director of the Institute of Traffic Engineers, celebrated the completion of 25 years service to the people of Milwaukee on July 1, 1941—during which time he has served as Engr. in charge of Illumination, Bureau of Illumination Service; Supt. and Chief Engr. Bureau of Electric Service; and member and chairman of the Traffic Committee of the Milwaukee Safety Commission. Prior to this time, Mr. Ilgner served as Elec. Dist. Engr. for the Eastern Michigan Power Copany and Illum. Engr. for Vaughn, Mayer & Sweet of Milwaukee. He is also a member of the Illuminating Engineering Society, Associate member of the A.I.E.E., and member of the Milwaukee Engineering Society.

Scores of friends in the various fields in which he is a leader sent their congratulations on that day. As Superintendent and Chief Engineer, Bureau of Electrical Service, he has won for Milwaukee an enviable reputation for good street lighting and efficient traffic control. His work contributed greatly in earning the title of "Safest City."

He was one of the early advocates of principles now widely accepted in street lighting practice. He is present Chairman of the Street Lighting Committee of the Institute. He is also well known for the development and application of principles for channelization of traffic.

The entire membership of the Institute of Traffic Engineers joins in congratulations to Howard on his quarter century of outstanding service to one of America's major cities and offers its sincere good wishes for continued success.

Minnesota to Manila

"Exiled "7,000 miles from the good old U. S." Larry Hendrickson (Jun. I.T.E.) regrets he will be unable to accept President Simpson's invitation to attend the October Convention in Chicago unless the War Department should find Larry's services suddenly needed in motor transportation in the U. S. The War Department, in its preparedness program, has assigned Larry as Motor Transport Officer with

the 10th Signal Service Company at Fort William McKinley, P. I., but he writes, "So far we have no motor vehicles at all." But apparently such an oversight doesn't phase Minnesota Highway Department's Electrical Engineer, for he adds that "Traffic conditions in Manila are enough to drive a traffic engineer to *strong* drink with all the *carabao*-drawn carts and rigs and the *oriental* habit of making the best of it and not being in too much of a hurry."

Certain members of the Institute who occasionally receive letters from First Lt. Hendrickson petition President Simpson not to urge the War Department to recall Larry but to bend all efforts to hold the October Convention in Manila during the "wet" season since Larry writes that "Even though this is the hot and *dry* season, the humidity is very high."

The members of the I.T.E. extend best wishes to First Lt. Hendrickson of the 10th Signal Service Company.

Effers Proffer Whoppers

by "BACKLASH" MCCONOCHIE

Channelization of weed beds to eliminate congestion in Chief Effer O'Meara's new egg beater was discussed pro and semi-pro at the Fifth Annual Wormsoak of the F & F Club. Held at Balsam Lake, Wisconsin, June 26-29. It attracted 125 members of the Institute, 118 of whom resisted its attraction and stayed home.

One-way movement toward boats was invoked to control all bass, but flagrant violations were observed by Neophish Wayne Volk. Charlie Rex' plugs were all for lighting on trees, but one hit the back of a pickerel sleeping in the sun. Howard Ilgner had a rush hour back-up of fish waiting for his minnows because of all the junk his wife had parked in his bait box.

The great outdoors so affected Larry Kane that he took to red meat, but the beads and feathers got in his teeth. (Editors may send back to be rehashed if this is too rare.) Gus Munch caught a 5-pound bass which conformed to all Standards and Specifications Committee requirements until he asked the boy who cleaned the fish to give him back his lead sinkers. Your scribe is the only one who didn't traffic in travesty. He simply ate pancakes and sold fly-rods so that his envious companions could have 30-minute fights with 3 pound, 1½ ounce bass, too?

Membership Applications

Armand Edward Keeley
Vice President and Chief Engineer, Prismo Safety Corporation, Huntingdon, Pennsylvania.
Home address: 2429 North Second Street, Harrisburg, Pennsylvania.

Gordon Karl Gravelle
Municipal Traffic Engineer, Traffic and Safety Division, Michigan State Highway Department.
Home address: 715 River Court, East Lansing, Michigan.

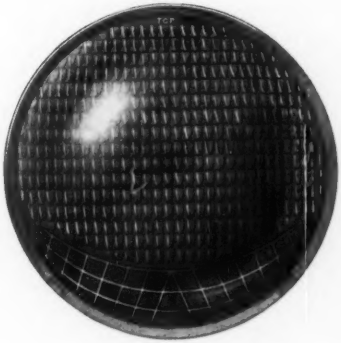
Elroy Lofgren Ericksen
Assistant Traffic and Safety Engineer, Utah State Road Commission.
Home address: 879 Logan Avenue, Salt Lake City, Utah.

Locking Ahead

August 4-16, Berkeley, Calif.
National Institute for Traffic Safety Training, University of California. Sidney J. Williams, 20 North Wacker Drive, Chicago.

August 18-21, Buffalo, N. Y.
Annual convention, International Association of Chiefs of Police. Edward Kelly, executive secretary. International Association of Chiefs of Police, 918 F Street, N. W. Washington, D. C.

The *New* Crouse-Hinds Lens



The new Crouse-Hinds traffic signal lens, used with our standard reflector, not only meets, but also far exceeds the candlepower distribution requirements of the Specifications of the Institute of Traffic Engineers.

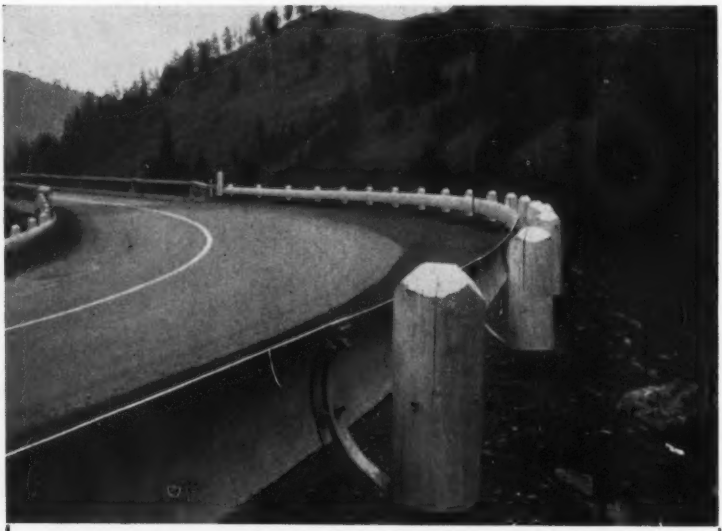
The green, amber, and red lenses conform strictly to the Institute of Traffic Engineers' Specifications for transmission and chromaticity. Every lens is carefully tested and selected, and all lenses are between the light and dark limits set by the Specifications.

The optical system of the Crouse-Hinds signal insures maximum signal visibility.

Crouse-Hinds Company

Syracuse, New York, U.S.A.

TUTHILL HIGHWAY GUARD RAIL



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"Protecting the Pedestrian"

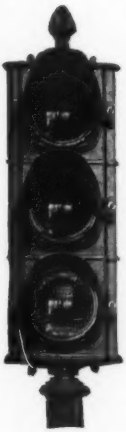
Oklahoma has been awarded first place, and Oregon and Utah have tied for second place in the 1940 National Pedestrian Protection Contest sponsored by the A.A.A. Mr. Owen A. Smith, Director, Traffic Control and Regulation, Dept. of Public Safety, Oklahoma City, Okla., has prepared an all-inclusive Pedestrian Protection Program which, no doubt, was one of the contributing factors in winning the award. The Editor recommends that all traffic engineers contemplating pedestrian campaigns contact Mr. Smith for an outline of the organization of Oklahoma's Dept. of Public Safety Program.

G.E. Demonstrates America's First Blackout Lighting

At Lynn, Mass., on May 14 before army and government officials and prominent citizens, blackout lighting, which facilitates the flow of auto and pedestrian traffic without being visible from the air, was demonstrated in this country for the first time.

Twelve specially designed one candlepower luminaires, spaced 100 ft. apart replaced the 4,000 candlepower street lights; and made it possible to see persons or objects at a distance of about twenty-five feet. The 7,000 persons taking part were cautioned not to light matches or smoke cigarettes inasmuch as it takes about 15 to 20

ELECTRIC SIGNALS



Standard signals adapted for all types of mounting. Synchronous and induction control mechanisms and accessory devices.

REFLECTOR SIGNALS

When signs are not enough or expense is a factor, reflector signals keep down both cost and accident rate.

8"; Six 1¾" Stimsonites

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REFLECTOR SIGNS

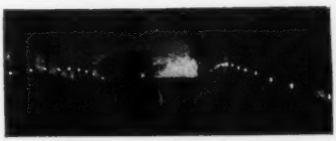
Large Stimsonized and standard reflector button signs for all traffic conditions.

72" SIGN
18" LETTERS

24" SIGN
6" LETTERS

DELINEATORS

Reflector Delineation gives essential road information after dark at daylight distances. The alignment and driving limits of the road are outlined by a channel of light.



SIGNAL SERVICE CORPORATION

SIGNALS

ELIZABETH, N. J.

minutes for the eyes to become adjusted to the low level of illumination.

The blackout luminaires use a 2½ watt Argon (gaseous) lamp. The light they give off cannot be seen at more than a few hundred feet above the ground.

Fence posts covered with fluorescent paints glowed when activated by the invisible light in the form of ultraviolet rays given off by the Argon lamp. Signposts, curbs, and perhaps even vehicles could be painted in the same way to increase ground visibility with the blackout lighting, it was explained.

Kirk M. Reid (Affil. I.T.E.), Illuminating Engineer, General Electric Co., designed the blackout luminaire. Congratulations, Kirk!

Seattle Experiences Blackout

On March 7, between 10.40 and 10.55 P.M. Seattle's Home Defense Committee, composed of local governmental agencies, citizens and civic groups, state police, home guard and army, navy and coast guard organizations staged a blackout without any fire alarms, police calls, traffic accidents or crimes reported immediately before or after. This required months of preparation and an extensive educational campaign.

Pedestrians were asked to stay on the sidewalks and not to cross streets. Motorists were advised to pull over to the curbs, turn off lights, and not smoke or strike lights.

The police department patrolled the streets with the assistance of 4,000 American Legion volunteers and members of the state home guard—all instructed in their duties by the police. At the city limits the state highway patrol stopped traffic from entering the city.

Stop streets were covered by volunteers given full police powers and instructed to make no arrests except under direction of regular police officers in order to avoid possible suits for false arrest.

The engineer's department was responsible for concealment of traffic lights whereas the power companies were charged with extinguishing all street lights, signs and other outside illumination.

While successful from an experimental standpoint, the police and traffic committee pointed out that an actual blackout would change the picture. More suitable methods for protecting this mass movement of people from its own dangers, which are as deadly as the dangers from bombing, were urged.

The committee suggested that luminous curb markings be developed and also a suitable headlight or shield which will project as much light as possible without marking a motorist's path. Seattle is now experimenting with reflector buttons fastened to hats, sleeves and belts.

Do You Know?

During the eight months from July 1940 through February 1941 England set the list of fatalities from air attacks at 100 per day. This number is only slightly greater than the toll claimed by cars in this country.

Separation of the three arms of the arrow in the new G. E. traffic signal lens eliminates halation, thus making the direction of the arrow clearly discernible. It may be mounted in any direction as the lens does not have the directional prisms of conventional lenses with the larger arrow sign.

Massachusetts has increased the length limit of buses to 35 ft. and of tractor-semi-trailer units carrying poles, lumber or metals to 60 ft.

Two filament lamps for traffic signals are now available, one filament being of lower wattage and much longer life than the other with which it is connected in parallel.

The National Defense Program is creating new problems in parking conditions and traffic control in hundreds of cities in the U.S.A.

Let us help you to quickly control and regulate this activity. Rush your orders to us marked "For Traffic Control in National Defense Area." They'll get the right-of-way in our production schedule.

We're giving immediate service to cities being effected by the National Defense Program.

Traffic Signs for Every Purpose

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1940 State Gas Tax Collections Jump 50 Million Dollars

Public Roads Administration figures show that $870,000,000 was collected by the states in gas taxes last year, or $50,000,000 more than in 1939; that gas consumption increased 6.2% with Tennessee, Florida, Massachusetts and South Carolina increases being more than 10%.

North American Gasoline Tax Conference reports that Minnesota, Maine and Oklahoma raised gas taxes from 3 to 4, 4 to 4½ and 4 to 5 cents respectively; that several states retained "emergency" gas taxes previously levied; and that the 48 states got more revenue from gasoline tax in 1940 than from any other source but that, despite increased driving by workers coming from long distances to defense plants and projects, nevertheless, "gasless Sundays" would reduce gasoline tax income to the states.

Financial Responsibility for New York Motorist

According to the financial responsibility law recently passed in N. Y. state, operators' licenses and registration plates are immediately suspended if involved in an accident resulting in personal injuries or in property damages of $25.00 or more until proof of financial responsibility is furnished to the Motor Vehicle Dept. Security must be posted covering property damage to the extent of $1,000 and personal injuries up to $5,000 for one person and $10,000 for two or more within ten days after filing accident reports which reports are mandatory for *all* drivers involved. After a judgment damages must be settled within fifteen days or suspension of licenses will follow.

This law will prevent a person from driving until liability for an accident is met and will encourage future financial responsibility.

New York and Oregon Legislatures Approve Scientific Tests for Intoxicated

Previously only Indiana and Maine had enacted, in 1939, such legislation despite the fact that results of such tests have been admitted as evidence in courts in at least 30 states.

The New York law's definition of evidence requires an analysis showing .05 per cent or less alcohol in a defendant's blood at the time of the act as prima facie evidence that the defendant was not intoxicated, while more than .15 per cent is prima facie evidence of intoxication. Maine established .07 per cent or less as evidence that the defendant was not intoxicated. Oregon's law makes no specific definition.

Cities Gain Revenue, Legal Privileges from 1941 Legislatures

The American Municipal Association reports that approximately 30 states now give their cities some share in taxes on gasoline and a part of highway fees. Municipal sharing in Indiana gasoline taxes was raised $1,300,000 a year, and in North Carolina $500,000. Arizona will turn back 25% of its auto lieu tax (tax in lieu of license fees); Arkansas will get $750,000 in state-collected highway revenues; Nebraska cities will get 30% of the state motor vehicle fuel tax instead of 10% and one-third of motor vehicle registration fees instead of none. Florida municipalities were relieved of the expense of constructing and maintaining highways linking them to the highway system. Washington cities successfully retained an allocation of gas taxes granted in 1939.

California, North Carolina and Iowa granted cities the right to establish municipal parking facilities and to levy taxes for this purpose.

On the Shelf

PROCEEDINGS OF THE HIGHWAY RESEARCH BOARD, 2101 Constitution Ave., Wash., D. C., Volume 20, Cloth Bound, Approximately 883 pages, June 1941, $3.25.

ROADSIDE DEVELOPMENT REPORTS, by Highway Research Board, Bound, Mimeographed, 69 pages, 50 cents.

1941 PUBLIC WORKS ENGINEERS' YEARBOOK, Am. Public Works Assn., 1313 E. 60th St., Chicago, Ill., cloth bound, 422 pages, $3.50. Contains authoritative articles on public works administration, city and regional planning, streets and highways, etc.

PARKING AND GARAGING, by C. T. McGavin, American Inst. of Steel Construction, 101 Park Ave., New York City, 11 pages, illus. An informative statement of the factors in the success and failure of parking garages.

SOME REFERENCES ON HIGHWAYS IN DEFENSE, by Katherine McNamara, Librarian, Dept. of Landscape Architecture and Regional Planning, Harvard University, Cambridge, Mass., mimeographed, 4 pages.

SUBDIVISION REGULATIONS, by Harold W. Lautner, former member of the Dept. of Regional Planning of the Graduate School of Design, Harvard University, and Executive Secretary of the American Institute of Planners, published by Public Administration Service, 1313 E. 60th St., Chicago, Ill., 346 pages, tables and figures, $3.75 postpaid. Recommended as a reference manual for all traffic planners as a standard guide in street planning, design and construction.

NEW IMPROVED DESIGN . . .

EMBOSSED LETTERS WITH COUNTER-EMBOSSED BEAD—RUGGED—LEGIBLE
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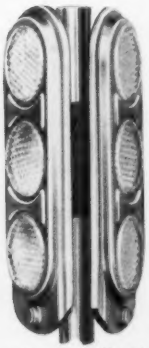
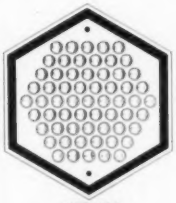
FURNISHED WITH 5" or 6" PLATES



Swivel type Fireball Delineator offers easy alignment, maximum reflecting efficiency at minimum cost



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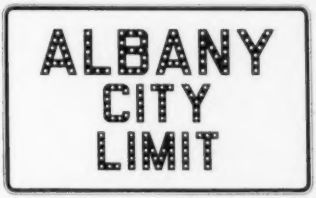

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ST. PAUL - - - - MINNESOTA

150 Engineers Attend First New England Traffic Engineering Conference

The First New England Traffic Engineering Conference was held from June 11th to 13th, inclusive, at the Massachusetts Institute of Technology under the joint sponsorship of M.I.T. and the traffic engineering section of the Massachusetts Department of Public Works.

Colonel H. W. Stickel, engineer officer of the first army corps area, spoke on "Traffic and National Defense."

Other traffic and military authorities participating in a traffic and national defense round table discussion were Edgar F. Copell of the Mass. Dept. of Public Works, Prof. Charles B. Breed of M.I.T., Major-General Daniel F. Needham, retired, and Capt. A. D. Henderson of the first army corps area.

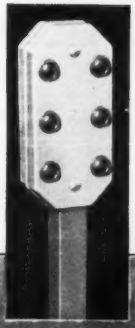
About 150 state, county, municipal and practicing engineers attended the Conference. It was unanimously voted to request the executive committee to make arrangements for a similar conference to be held next year.

A smoker was held on the first evening of the Conference, at which Dr. Edgerton of M.I.T. showed high speed still and motion pictures.

The Conference opened with welcoming remarks by Herman A. MacDonald, Commissioner of the Mass. Dept. of Public Works, and Prof. Charles B. Breed, head of the Civil Eng. Dept., M.I.T.

Harold F. Hammond, director of Conservation Bureau, discussed "Traffic Engineering Accomplishments." Mr. Hammond told the Conference that traffic engineering is saving millions of dollars in lives, time and property each year.

Edwin C. Williams, assistant traffic engineer of the Mass. Dept. of Public Works, spoke on "Putting Accident



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Facts to Work," and Joseph C. Cressey, manager of the Mass. State-Wide Highway Planning Survey, explained "The Interpretation and Use of Traffic Survey Data."

Theodore M. Matson, of Yale University, discussed "Traffic Control," and C. A. B. Halverson, Jr., Consulting Engineer of the General Electric Company, talked on "Traffic Safety Illumination."

Donald S. Berry, traffic engineer of the National Safety Council, discussed "Vehicle Behavior and Limitations." He was followed by Ralph W. Eaton, traffic engineer for the city of Providence, Rhode Island, who spoke on "Tackling the Parking Problem" and Arnold H. Vey, traffic engineer of the New Jersey Dept. of Motor Vehicles, whose subject was "Streamlining Intersection and Highway Design." Prof. A. J. Bone of M.I.T. talked about the "Application of Traffic Data to Studies in Highway Economics."

The proceedings of the conference will be published and furnished to delegates and to other interested persons.

Members of the Institute of Traffic Engineers who participated as lecturers were: Messrs. Copell, Hammond, Matson, Eaton and Vey. It will be noted that Messrs. Copell and Hammond also served on the executive committee. The Institute representation at this conference comprised about forty per cent of all those who participated in promotional capacities and as lecturers.